UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,605	12/11/2001	Bharadwaj S. Amrutur	10010107-1	6541

7590 05/23/2006

AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER	
TORRES, JOSEPH D	

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,605	AMRUTUR ET AL.	
	Examiner	Art Unit	
	Joseph D. Torres	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 34-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 34-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. In view of the amendment filed 03/30/2006, the Examiner withdraws all previous rejections under 35 USC § 101.

Response to Arguments

2. The Applicant contends that claim 5 is proper dependant and further limits claim 1, "It is understood that an ECC may perform its error correction code method using various hardware and software related techniques".

The Examiner disagrees and asserts that claim 5 does not recite any hardware or software nor does it recite the use of any ECC technique. There is absolutely no difference between the last limitation in claim 1 and claim 5 other than the arrangement of the words.

Applicant's arguments regarding previous prior art rejections of claims 1-10 and 34-37 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 5, 34, 35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A) in view of Bar-Zohar; Meir (US 4575754 A).

35 U.S.C. 103(a) rejection of claims 1, 5, 34, 35 and 37.

Kumar teaches a scrambler device for receiving a source encoded data bit stream (Scrambler 102 in Figure 9 of Kumar receives source encoded message 101), the scrambler device scrambles groups of data in the data bit stream to statistically balance

the number of logic low and logic high bits in the groups of data (a message is a group of data bits in a data bit stream: Note: Figure 9 in Kumar teaches that data is scrambled one message at a time; Note also that one of ordinary skill in the art at the time the invention was made would have recognized that the Device in Figure 9 of Kumar is a device for encoding a bit stream of data in message blocks since any useful system transmits many more bits than what can be stored in the transmission ECC message block of Figure 14 in Kumar comprising a source message having K=306 source message bits; one of ordinary skill in the art at the time the invention was made would have recognized that randomization is a means for statistically balance the bits in the groups of data by randomizing the data, in particular, randomization is a means for statistically balance the number of logic low and logic high bits in the groups of data); and an ECC encoder device that receives the scrambled groups of data from the Scrambler device and converts said scrambled groups of data into ECC-encoded data (ECC Encoder 38 in Figure 9 of Kumar receives the scrambled source message group of data having K=306 source message bits from the Scrambler device and converts said scrambled groups of data into ECC-encoded data).

However Kumar does not explicitly teach the specific use of scrambling on a group-wise basis.

Bar-Zohar, in an analogous art, teaches use of scrambling on a group-wise basis (see Abstract in Bar-Zohar).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar with the teachings of Bar-Zohar by including use

of scrambling on a group-wise basis. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of scrambling on a group-wise basis would have provided scrambled signal of high security but which may be unscrambled by a decoder having a complementary random delay characteristic and a total segment storage capacity which is less than that of the scrambler and also less than the maximum line-to-line interchange of the segments within each block (see Abstract in Bar-Zohar).

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam) in view of Bar-Zohar; Meir (US 4575754 A).

35 U.S.C. 103(a) rejection of claim 6.

Adam teaches a scrambler for converting original received data into scrambled data (data bits D1, D2 and D3 and other bits K1', K2', and K3' in step 304 of Figure 3 of Adam are received data at a scrambler device; col. 4, lines 51-59 in Adam teach that received data data bits D1, D2 and D3 and other bits K1', K2', and K3' in Step 304 of Figure 3 are received by the scrambler which outputs SD1, SD2 and SD3 and SK1', SK2' and SK3' in Step 306; Adam explicitly teaches that SD1, SD2 and SD3 and SK1', SK2' and SK3' in Step 306 are scrambled versions of received data D1, D2 and D3 and other bits K1', K2', and K3' in Step 304 of Figure 3); and an ECC encoder for converting

said scrambled data into ECC-encoded data, said scrambled data having a statistical balance between the number of logic low and logic high bits in the groups of data (scrambled received data SD1, SD2 and SD3 and other bits K1', K2', and K3' are FEC encoded to convert received data SD1, SD2 & SD3, scramble encoded control bits SK1', SK2' & SK3' and synchronization bits SS into ECC-encoded data; one of ordinary skill in the art at the time the invention was made would have recognized that randomization is a means for statistically balance the bits in the groups of data by randomizing the data, in particular, randomization is a means for statistically balance the number of logic low and logic high bits in the groups of data).

However Adam does not explicitly teach the specific use of scrambling on a group-wise basis.

Bar-Zohar, in an analogous art, teaches use of scrambling on a group-wise basis (see Abstract in Bar-Zohar).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Adam with the teachings of Bar-Zohar by including use of scrambling on a group-wise basis. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of scrambling on a group-wise basis would have provided scrambled signal of high security but which may be unscrambled by a decoder having a complementary random delay characteristic and a total segment storage capacity which is less than that of the scrambler and also less than the

maximum line-to-line interchange of the segments within each block (see Abstract in Bar-Zohar).

35 U.S.C. 102(e) rejection of claims 7 and 8.

Adam teaches Serializer 108 in Figurer 1 of Adams for converting said ECC-encoded data from FEC Encoder 106 into serialized data and transmitting it; wherein the ECC-encoded data includes frame alignment information (Step 208 in Figure 2 of Adam teaches that a synchronization frame alignment information sequence is added to scrambled data, hence the ECC-encoded data from FEC Encoder 106 in Figure 1 includes a synchronization frame alignment information sequence); and the system further comprises a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information (Deserializer 112, Frame Aligner 114, FEC Decoder 116 and 48B/50B Decoder in Figure 1 of Adam comprise a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information).

6. Claims 2 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A) and Bar-Zohar; Meir (US 4575754 A) in view of Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam).

35 U.S.C. 103(a) rejection of claim 2.

Kumar and Bar-Zohar substantially teaches the claimed invention described in claim 1 (as rejected above).

However Kumar and Bar-Zohar does not explicitly teach the specific use of a serializer nor the frame alignment details required in any system for synchronization.

Adam, in an analogous art, teaches Serializer 108 in Figurer 1 of Adams for converting said ECC-encoded data from FEC Encoder 106 into serialized data and transmitting it; wherein the ECC-encoded data includes frame alignment information (Step 208 in Figure 2 of Adam teaches that a synchronization frame alignment information sequence is added to scrambled data, hence the ECC-encoded data from FEC Encoder 106 in Figure 1 includes a synchronization frame alignment information sequence); and the system further comprises a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information (Deserializer 112, Frame Aligner 114, FEC Decoder 116 and 48B/50B Decoder in Figure 1 of Adam comprise a receiver for receiving said serialized data and converting the serialized data into data frames based upon the frame alignment information).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar and Bar-Zohar with the teachings of Adam by including use of a serializer. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a serializer would have provided a means for communicating on a serial link.

35 U.S.C. 103(a) rejection of claim 36.

Kumar teaches a scrambler device for receiving a bit stream (Scrambler 102 in Figure 9 of Kumar), the scrambler device scrambles groups of data in the data bit stream to statistically balance the number of logic low and logic high bits in the groups of data (a message is a group of data bits in a data bit stream: Note: Figure 9 in Kumar teaches that data is scrambled one message at a time; Note also that one of ordinary skill in the art at the time the invention was made would have recognized that the Device in Figure 9 of Kumar is a device for encoding a bit stream of data in message blocks since any useful system transmits many more bits than what can be stored in the transmission ECC message block of Figure 14 in Kumar comprising a source message having K=306 source message bits; one of ordinary skill in the art at the time the invention was made would have recognized that randomization is a means for statistically balance the bits in the groups of data by randomizing the data, in particular, randomization is a means for statistically balance the number of logic low and logic high bits in the groups of data); and an ECC encoder device that receives the scrambled groups of data from the Scrambler device and converts said scrambled groups of data into ECC-encoded data (ECC Encoder 38 in Figure 9 of Kumar receives the scrambled source message group of data having K=306 source message bits from the Scrambler device and converts said scrambled groups of data into ECC-encoded data).

However Kumar does not explicitly teach the specific use of other bits.

Adam, in an analogous art, teaches use of other bits (K1', K2', and K3' in Step 304 of Figure 3 are).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar with the teachings of Adam by including use of other bits. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of other bits would have provided error protection for control bits as well as data bits.

However Kumar and Adam does not explicitly teach the specific use of scrambling on a group-wise basis.

Bar-Zohar, in an analogous art, teaches use of scrambling on a group-wise basis (see Abstract in Bar-Zohar).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar and Adam with the teachings of Bar-Zohar by including use of scrambling on a group-wise basis. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of scrambling on a group-wise basis would have provided scrambled signal of high security but which may be unscrambled by a decoder having a complementary random delay characteristic and a total segment storage capacity which is less than that of the scrambler and also less than the maximum line-to-line interchange of the segments within each block (see Abstract in Bar-Zohar).

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar; Derek D. (US 5825807 A), Bar-Zohar; Meir (US 4575754 A) and Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam) in view of Kimmitt; Myles (US 6738935 B1).

35 U.S.C. 103(a) rejection of claims 3.

Kumar, Bar-Zohar and Adam substantially teaches the claimed invention described in claims 1 and 2 (as rejected above). In addition, Figure 4 of Adam teaches a frame-recoverer for converting said serialized data into data frames (Deserializer 112 and Frame Aligner 114 in Figure 1 of Adam comprise a frame-recoverer for converting said serialized data into data frames; see Step 402 in Figure 4 of Adam); an ECC decoder for converting said data frames into ECC-decoded data (FEC Decoder 116 in Figure 1 of Adam is an ECC decoder for converting said data frames into ECC-decoded data and error indications; see Step 404 in Figure 4 of Adam); and a scrambler for converting said ECC-decoded data into de-scrambled data (48B/50B Decoder in Figure 1 of Adam comprises a scrambler for converting said ECC-decoded data from FEC Decoder 116 into de-scrambled data; see Step 408 in Figure 4 of Adam).

However Kumar, Bar-Zohar and Adam does not explicitly teach the specific use of error indications.

Kimmitt, in an analogous art, teaches use of error indications (Parity Check Logic 186 in Figure 8 of Kimmitt is an ECC decoder for converting said data frames into ECC-

decoded data and error indications CE). Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kumar, Bar-Zohar and Adam with the teachings of Kimmitt by including use of error indications. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of error indications would have provided the opportunity to synchronize frames during frame alignment (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 4.

Adam and Kimmitt teach said frame-recoverer uses said error indications in converting said serialized data into data frames (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adam; Joel Fredric et al. (US 6628725 B1, hereafter referred to as Adam) and Bar-Zohar; Meir (US 4575754 A) in view of Kimmitt; Myles (US 6738935 B1).

35 U.S.C. 103(a) rejection of claim 9.

Figure 4 of Adam teaches a frame-recoverer for converting said serialized data into data frames (Deserializer 112 and Frame Aligner 114 in Figure 1 of Adam comprise a frame-recoverer for converting said serialized data into data frames; see Step 402 in Figure 4 of Adam); an ECC decoder for converting said data frames into ECC-decoded data (FEC Decoder 116 in Figure 1 of Adam is an ECC decoder for converting said data frames into ECC-decoded data and error indications; see Step 404 in Figure 4 of Adam); and a scrambler for converting said ECC-decoded data into de-scrambled data (48B/50B Decoder in Figure 1 of Adam comprises a scrambler for converting said ECC-decoded data from FEC Decoder 116 into de-scrambled data; see Step 408 in Figure 4 of Adam).

However Adam and Bar-Zohar does not explicitly teach the specific use of error indications.

Kimmitt, in an analogous art, teaches use of error indications (Parity Check Logic 186 in Figure 8 of Kimmitt is an ECC decoder for converting said data frames into ECC-decoded data and error indications CE). Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Adam and Bar-Zohar with the teachings of Kimmitt by including use of error indications. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of error indications would have provided the

opportunity to synchronize frames during frame alignment (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

35 U.S.C. 103(a) rejection of claim 10.

Adam and Kimmitt teach said frame-recoverer uses said error indications in converting said serialized data into data frames (Note: col. 17, lines 1-16 in Kimmitt teaches that error indications CE are used for frame alignment).

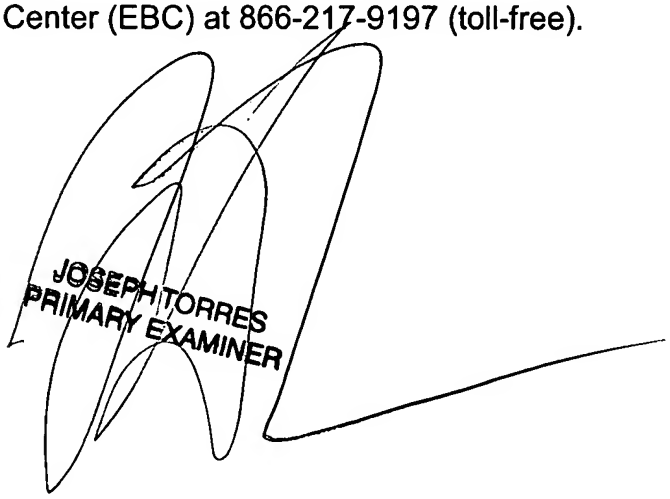
Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Examiner includes a small number of patents involving scrambling that could have been used in Prior Art rejections of the claims, however, the prior arts are not a comprehensive list as scrambling and interleaving are used in so many applications and there are so many patents teaching scrambling and interleaving (Note: interleaving in the art is substantially the same type of operation as scrambling).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133